telephony

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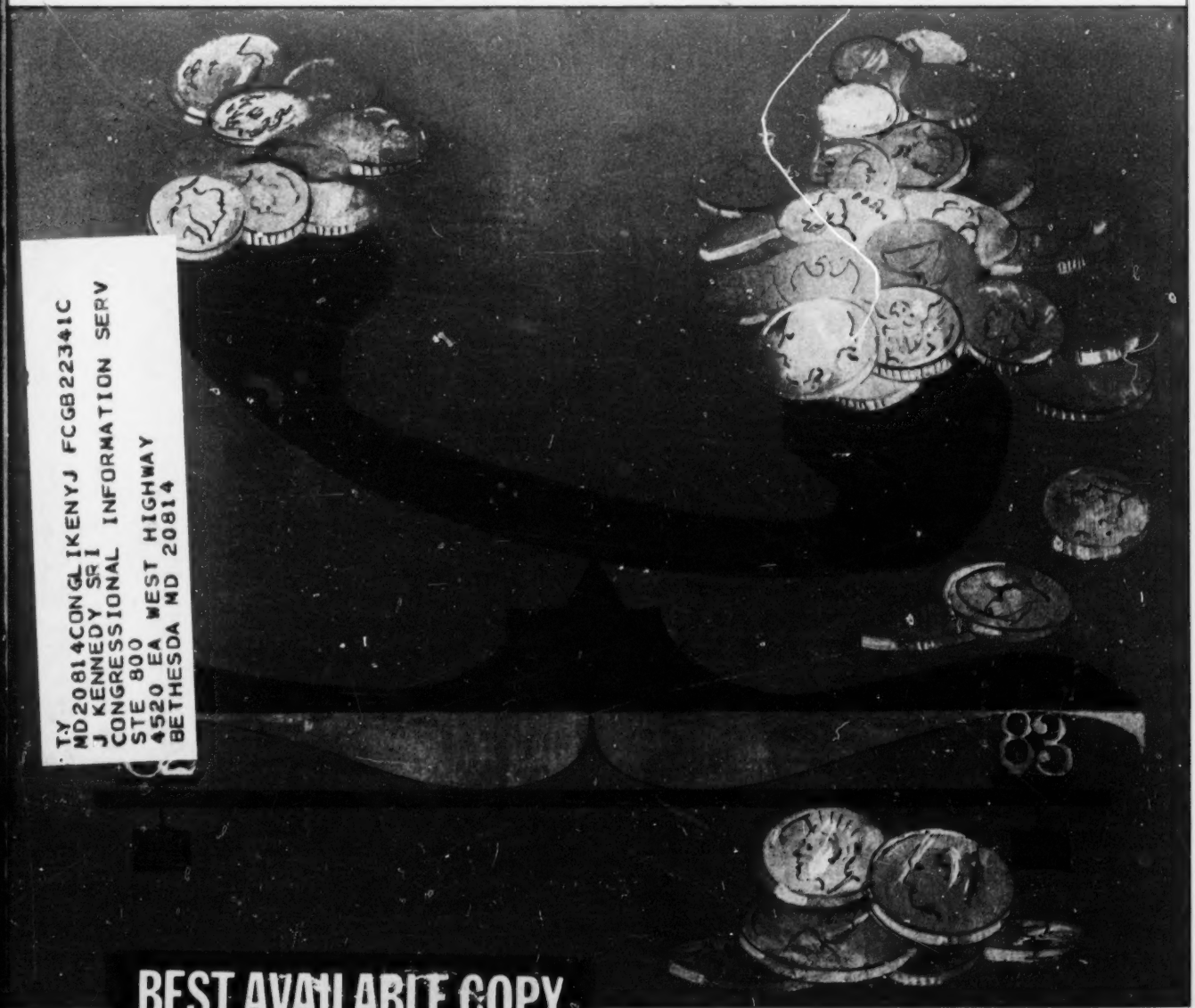

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Telecom spending nears $29 billion for new, composite telecom industry in '83

Spending in the telecom industry continues to climb, but the identities of the spenders are changing rapidly and will continue to change

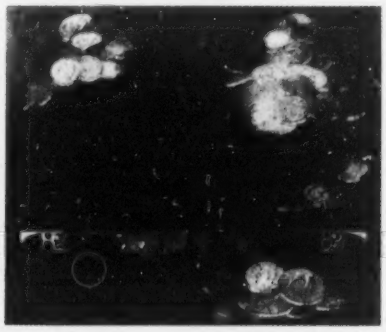
DEL MYERS, EDITOR, and CZATDANA INAN, MARKET RESEARCH DIRECTOR

U.S. TELECOMMUNICATIONS equipment spending in 1983 will reach an estimated level of $28.9 billion. $7.0 billion more than the combined 1982 spending of Bell and the Independent telephone companies.

Before betting on an unprecedented telecommunications boom, however, the composition of these figures deserves close examination. The figures do not correlate exactly with TELEPHONY's last annual review and forecast (TELEPHONY, Jan. 11, 1982, p. 25). Also, this report covers some new telecommunications entities but not all of them.

This review and forecast includes the principal successors to the monopoly telephone industry and an in-depth profile of the Fortune 1000 industrial companies and 300 service organizations recently surveyed by TELEPHONY.

The following sources supplied the data from which we have extrapolated a reasonable, composite picture



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A lot of money hangs in the balance when telecom establishments draw up their annual budgets. One thing is for certain: expenditures on telecommunications will continue to grow because telecommunications services are more important than ever before.

Table 1 Independent and Bell Construction Expenditures

	Independent Telephone Companies (millions of dollars)**			Bell Telephone Companies (millions of dollars)***			Combined Independent & Bell Telephone Companies (millions of dollars)		
	Const Spending	Increase (Decrease) vs Previous Year	% Increase (Decrease)	Const Spending	Increase (Decrease) vs Previous Year	% Increase (Decrease)	Const Spending	Increase (Decrease) vs Previous Year	% Increase (Decrease)
1961	$566	$—	$—	$2,759	$—	—	$3,325	$—	—
1964	780	—	—	3,566	—	—	4,346	—	—
1967	1,254	—	—	4,359	—	—	5,613	—	—
1970	1,665	—	—	7,314	—	—	8,979	—	—
1973	2,325	—	—	9,516	—	—	11,841	—	—
1976	2,481	59	2.4	10,044	519	5.5	12,525	578	4.9
1977	2,797	316	12.7	11,793	1,749	17.4	14,590	2,065	16.5
1978	3,471	674	24.1	13,951	2,158	18.3	17,422	2,832	19.4
1979	4,205	734	21.1	16,050	2,099	15.0	20,255	2,833	16.3
1980	4,544	339	8.1	17,505	1,455	9.1	22,049	1,794	8.9
1981	4,852	308	6.8	18,019	514	2.9	22,871	822	3.7
1982	4,825	(27)	(0.6)	17,030	(989)	(5.5)	21,855	(1016)	(4.4)
1983*	5,115	290	6.0	16,800	(230)	(1.4)	21,915	60	0.003

*Estimated
**Source: USITA
***Source: AT&T (Bell Telephone Companies include AT&T, its principal telephone subsidiaries, and Bell affiliates, Southern New England Telephone Co. and Cincinnati Bell, whose common stocks are minority-owned by AT&T)

of the new telecommunications industry: the top 23 Independent telcos will spend an estimated $5.1 billion in 1983; American Telephone & Telegraph Co. (AT&T) will spend an estimated $16.8 billion in 1983; interconnect companies and their affiliates will account for an estimated $5.5 billion in 1983; and the top 6 specialized common carriers (SCCs) will spend an estimated $1.5 billion in 1983. Thus, the total estimated spending in 1983 for the entire industry will be $28.9 billion.

Naturally, a review and forecast based on the new telecommunication reality may not be as satisfying as were the monopoly-based ones. But the monopoly clock is running out in many areas and, as more competitive clocks begin ticking, reliable data becomes more elusive.

Even the significance of traditional data is beginning to change; for example, the number of telephones owned by Bell and the Independents. Once a leading indicator of company health and progress, these data already show the shift toward customer ownership: In 1982, the Independents owned 344,000 fewer phones and the estimated decrease in 1983 is 2.5 million.

Even more drastic changes in telephone ownership are occurring in the Bell System with the transfer of

Continued on page 30

Table 2 Independent Telephone Company Statistics

Number of Telephones (000 omitted)

	Year-End Total	Change
1976	28,209	—
1977	29,675	1,466
1978	31,549	1,874
1979	33,226	1,677
1980	34,665	1,439
1981	35,341	676
1982	34,997*	(344)
Change 1976-1981	7,132 = 25% of year-end '76	
1983	32,493*	(2,504)

Number of Independent Telephone Exchanges

	Year-End Total	Change
1976	11,040	—
1977	11,045	5
1978	11,053	8
1979	11,050	(3)
1980	11,040	(10)
1981	11,086	46
1982	11,090*	4
Change 1976-1981	46 = 0.004 of year-end '76	
1983	11,095*	5

Number of Independent Telephone Companies

	Year-End Total	Change
1976	1,590	—
1977	1,556	(34)
1978	1,527	(29)
1979	1,488	(39)
1980	1,483	(5)
1981	1,459	(24)
1982	1,435*	(24)
Change 1976-1981	(131) = (8%) of year-end '76	
1983	1,415*	(20)

Investment in Gross Plant ($000,000 omitted)

	Year-End Total	Change
1976	$23,000	—
1977	25,130	2,130
1978	27,788	2,658
1979	31,644	3,856
1980	35,300	3,656
1981	38,298	2,998
1982	42,163*	3,865
Change 1976-1981	$15,298 = 67% of year-end '76	
1983	45,936*	3,773

Total Operating Revenues ($000,000 omitted)

	Year-End Total	Change
1976	$ 6,300	—
1977	7,115	815
1978	8,085	970
1979	9,240	1,155
1980	10,475	1,235
1981	12,206	1,731
1982	14,136*	1,930
Change 1976-1981	$5,906 = 94% of year-end '76	
1983	15,718*	1,582

Employes

	Year-End Total	Change
1976	160,000	—
1977	167,000	7,000
1978	179,000	12,000
1979	190,000	11,000
1980	194,000	4,000
1981	197,200	3,200
1982	195,700*	(1,500)
Change 1976-1981	37,200 = 23% of year-end '76	
1983	194,600*	(1,100)

*Estimated Source: USITA

Table 3 Independent Telephone Company Composite Plant Statistics ($000,000 Omitted)

Buildings

	Year-End Total	Increase
1976	$1,439	—
1977	1,523	$ 84
1978	1,644	121
1979	1,826	182
1980	2,024	198
1981	2,143	119
Change 1976-1981	$704 = 49% of year-end '76	

Underground Cable

	Year-End Total	Increase
1976	$ 910	—
1977	976	$ 66
1978	1,082	106
1979	1,245	163
1980	1,408	163
1981	1,594	186
Change 1976-1981	$684 = 75% of year-end '76	

Large Private Branch Exchanges

	Year-End Total	Increase
1976	$599	—
1977	660	$ 61
1978	726	66
1979	853	97
1980	928	75
1981	959	31
Change 1976-1981	$360 = 60% of year-end '76	

Aerial Cable

	Year-End Total	Increase
1976	$2,360	—
1977	2,516	$156
1978	2,698	182
1979	2,979	281
1980	3,269	290
1981	3,493	224
Change 1976-1981	$1,133 = 48% of year-end '76	

Station Apparatus

	Year-End Total	Increase
1976	$2,058	—
1977	2,275	$217
1978	2,536	261
1979	2,919	383
1980	3,102	183
1981	3,220	118
Change 1976-1981	$1,162 = 56% of year-end '76	

Underground Conduit

	Year-End Total	Increase
1976	$567	—
1977	607	$ 40
1978	665	58
1979	766	101
1980	885	119
1981	947	62
Change 1976-1981	$380 = 67% of year-end '76	

Central Office Equipment

	Year-End Total	Increase
1976	$ 7,543	—
1977	8,170	$ 627
1978	8,964	794
1979	10,128	1,164
1980	11,420	1,292
1981	12,648	1,228
Change 1976-1981	$5,105 = 68% of year-end '76	

Buried Cable (Plowed In)

	Year-End Total	Increase
1976	$2,851	—
1977	3,219	$368
1978	3,655	436
1979	4,166	511
1980	4,857	691
1981	5,401	544
Change 1976-1981	$2,550 = 89% of year-end '76	

Vehicles, Other Work Equipment

	Year-End Total	Increase
1976	$404	—
1977	460	$56
1978	551	91
1979	641	90
1980	717	76
1981	804	87
Change 1976-1981	$400 = 99% of year-end '76	

PhoneCenter Stores to American Bell Inc. and the intensification of retail marketing at outlets such as Sears (TELEPHONY, Nov. 8, 1982, p. 11). In fact, when current inventories are exhausted, the Bell operating companies will be out of the new customer premise equipment business, at least for a time.

In such unsettled times, no forecast can have the degree of certainty and completeness it once had.

But this unique, composite snapshot of a dynamic industry in transition is of vital importance to all entities. It shows more clearly than ever how the telecommunications revenue, cost and investment streams are branching, narrowing, widening, deepening and, sometimes, disappearing.

The telephone industry

The 1983 combined construction spending of Bell and the Independent telephone companies is estimated at $21.9 billion, a 0.003% increase over 1982 spending. Of this amount, the Independent share is $5.1 billion; Bell's, $16.8 billion which is 1.4% less than the amount spent in 1982 (Table 1).

'. . . when current inventories are exhausted, the Bell operating companies will be out of the new customer premise equipment business. . .'

The combined total of $21.9 billion spent in 1982 represents a decrease of $1 billion (4.4%) from 1981 spending, with Bell showing the major decrease—$989 million (5.5%).

In 1982, Independents had planned to spend $5.4 billion but actually spent $4.8 billion, slightly less than they spent in 1981. Consequently, the projected increase to a 1983 spending level of $5.1 billion, adjusted for inflation, represents a real decrease rather than the stated increase of 6%.

The Independent growth rates (Table 2) also show significant decreases: the number of telephones owned, although still positive, declined from 28 to 19%. The growth rate in gross plant investment slid from 70 to 52%; operating revenues, from 89 to 72%. The number of employes will fall from a 1981 high of 197,200 to approximately 194,600 in 1983. And the number of Independents slowly continues to decrease at the rate of 6 to 8% annually.

Comparable Bell System statistics were unavailable for this report. Comparable statistics will not be available until the company's massive restructuring plan is approved by the U.S. District Court overseeing the AT&T-Dept. of Justice settlement. Complicating the already complex situation is the separate AT&T subsidiary, American Bell Inc., formed in compliance with the Computer II decision of the Federal Communications Commission (FCC).

AT&T revenues, as of Nov. 30, 1982, were $64.6 billion, up 13% over the Nov. 30, 1981 figure of $57.3 billion. In spite of this revenue increase, net income for the latest 3 month period (September-November 1982) decreased by 3.4%. This first quarterly decrease in 7 years, according to AT&T Chairman Charles Brown, resulted from the recession.

The composite of Independent and Bell plant statistics (Tables 3 and 4) illustrates the massive investment in telecommunications plant already in place—not estimated—at the end of 1981. For the period 1976-81, the Independents' average investment growth was 65%; Bell's, 56%.

The top 23 Independents partici-

Continued on page 32

Table 4 Bell System Composite Plant Statistics ($000,000 omitted) (source AT&T)

Buildings

	Year-End Total	Increase
1976	$8,950	—
1977	9,553	$ 603
1978	10,080	527
1979	10,680	600
1980	12,117	1,437
1981	12,834	717

Change 1976-1981
$3,884 = 43% of year-end '76

Large Private Branch Exchanges

	Year-End Total	Increase
1976	$3,230	—
1977	3,256	$ 26
1978	3,300	44
1979	3,385	85
1980	3,495	110
1981	3,597	102

Change 1976-1981
$367 = 11% of year-end '76

Underground Cable

	Year-End Total	Increase
1976	$6,262	—
1977	6,760	$498
1978	7,393	633
1979	8,189	796
1980	9,146	957
1981	9,863	717

Change 1976-1981
$3,601 = 58% of year-end '76

Aerial Cable

	Year-End Total	Increase
1976	$7,126	—
1977	7,659	$533
1978	8,258	599
1979	8,950	692
1980	9,798	848
1981	10,341	543

Change 1976-1981
$3,215 = 45% of year-end '76

Station Apparatus

	Year-End Total	Increase
1976	$7,238	—
1977	8,039	$801
1978	9,026	987
1979	9,889	863
1980	10,875	986
1981	11,708	833

Change 1976-1981
$4,470 = 62% of year-end '76

Buried Cable (Plowed In)

	Year-End Total	Increase
1976	$7,357	—
1977	8,283	$ 926
1978	9,421	1,138
1979	10,735	1,314
1980	12,078	1,343
1981	13,337	1,259

Change 1976-1981
$5,980 = 81% of year-end '76

Central Office Equipment

	Year-End Total	Increase
1976	$35,351	—
1977	37,714	$2,363
1978	40,403	2,689
1979	43,140	2,737
1980	46,468	3,328
1981	49,157	2,689

Change 1976-1981
$13,806 = 39% of year-end '76

Vehicles & Other Work Equipment

	Year-End Total	Increase
1976	$1,225	—
1977	1,365	$140
1978	1,548	183
1979	1,852	304
1980	2,101	249
1981	2,316	215

Change 1976-1981
$1,091 = 89% of year-end '76

Underground Conduit

	Year-End Total	Increase
1976	$4,266	—
1977	4,646	$ 380
1978	5,189	543
1979	5,873	684
1980	6,617	744
1981	7,103	486

Change 1976-1981
$2,837 = 67% of year-end '76

Total Station Equipment

	Year-End Total	Increase
1976	$18,117	—
1977	19,835	$1,718
1978	21,974	2,139
1979	24,372	2,398
1980	27,117	2,745
1981	29,610	2,493

Change 1976-1981
$11,493 = 63% of year-end '76

Table 5 Construction Spending of Major Independents, plus other '82 Year-End Estimated Figures (dollar figures are in millions)

Company	No. of Access Lines	No. of Telephones	Plant Investment	Operating Revenues	Construction Spending Actual 1981	Actual 1982	Estimated 1983	Estimated 1984
GTE	9,600,000	16,000,000	$19,400	$ 6,600	$2,300.0	$2,300.0	$2,400.0	$2,700.0
United[a]	2,946,962	4,489,069	5,408	1,832	588.0	550.0	570.0	633.0
Continental	2,098,791	2,951,900	3,640	1,326	390.8	432.5	495.8	523.1
Centel	1,178,000	1,567,500	1,986	694	198.9	187.4	188.6	187.2
Mid-Continent	700,000	1,145,000	1,234	333	103.1	124.0	140.0	144.0
	16,523,753	26,153,469	31,869	10,785	3,580.0	3,593.9	3,794.4	4,187.3
% Total Ind	—	74.7%	75.6%	76.3%	73.8%	74.5%	74.2%	—
Puerto Rico Tel	—	697,447	1,054	297	113.1	90.0	108.0	111.0
Rochester Tel	428,984	528,313	575	223	53.6	43.9	46.0	50.8
Lincoln Tel	195,000	341,200	359	117	37.0	36.0	32.1	29.1
Century Tel	197,000	301,000	327	135	28.6	30.0	38.0	40.0
Telephone & Data	155,350	261,000	274	70	24.5	33.0	27.5	19.1
Commonwealth	135,400	247,944	206	56	12.3	14.0	17.0	19.5
Pacific Telecom[b]	114,100	219,000	785	362	81.6	191.9	104.1	95.3
Allied Tel	138,000	211,000	251	67	23.7	23.0	25.0	32.8
Anchorage Tel[c]	96,300	204,980	216	73	22.6	24.9	15.7	22.9
Illinois Consolidated	73,500	120,000	128	49	12.6	21.4	18.5	19.0
North State	67,700	118,000	71	27	6.6	7.0	8.0	8.0
Citizens Utilities	74,300	114,579	238	71	35.2	30.5	29.9	29.7
Concord Tel	61,500	100,000	63	20	4.2	3.0	3.2	5.0
CP National	55,200	92,800	164	55	20.7	19.6	16.2	21.0
North-West Tel	—	76,300	81	24	8.7	10.2	6.7	7.8
North Pittsburgh	—	61,400	54	18	4.6	5.2	6.0	6.0
Universal Tel	—	59,700	65	18	11.2	6.5	4.8	2.1
Denver & Ephrata	—	55,500	37	11	2.5	2.6	3.1	3.8

a Total Telephones as of Sept. 30, 1982
b Formerly Telephone Utilities. Figures include Alascom (long distance carrier), acquired June 1982
c Access lines do not include a 15,000-line switch to be in service Feb. 1, 1983

pating in this survey (Table 5) account for approximately 87% of the 1982 gross plant investment of the entire Independent industry (Table 2) and 88% of the operating revenues. The top 5 Independents account for approximately 75% of Independent telephones, gross plant investment, revenues and construction spending.

Of the top 5 Independents, each forecasts increased construction spending in 1983; of the top 10 Independents, 7 forecast an increase; of the top 23 Independents, 14 plan to spend more.

Although lacking some desirable details, the available data clearly reveal a telephone industry busily repositioning itself to cope with the new telecommunications realities. The conventional indicators confirm slower growth or, more accurately, the maturity of an industry which largely has accomplished its mission of providing universal service at affordable rates.

The traditionally conservative industry now is responding conservatively to overall economic uncertainty and to certain but yet unmeasured effects on revenues and opportunities related to recent regulatory and judicial actions.

'Although lacking some details, the available data clearly reveal a telephone industry busily repositioning itself to cope with the new telecommunications realities.'

The SCCs

SCCs now are permanent and growing parts of the U.S. telecommunications scene although their combined revenues and market share are small in comparison with those of the traditional telephone industry (Table 6). Since only a few of the miscellaneous common carriers (MCCs) are classified as SCCs, a definition of the term is important.

In 1969, the FCC began collecting information from a group of licensees which provided domestic, point-to-point transmission service over their own microwave facilities. The transmissions mainly were one-way television signals to cable television (CATV) companies. These licensees were called "miscellaneous" common carriers.

Certain of these MCCs which began providing voice and data transmissions over their facilities in the early '70s became known as

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Table 6 Toll Revenues ($000 omitted)

	Dec. 31, 1978	Dec. 31, 1981	Market Share 1978	Market Share 1981	% Growth 1978-1981
Bell System	$21,207,000	$30,919,000	82%	80%	+46
Independents	4,366,000	7,117,000	17%	18%	+63
MCI	78,167	413,131			+429
SPC	49,921	230,882			+362
USTS	8,873	82,641			+831

Source: Federal Communications Commission, Form P, Form M

Table 7 SCC Revenue, Expenses and Plant Investment, 1981-1982 ($000 omitted)

	Revenues	Expenses	Plant Investment Gross	Net
MCI Communications Corp.	$413,131	$382,245	$428,852	$409,980
N-Triple C*	6,328	5,378		
Southern Pacific Communications (SPC)	230,882	197,046	281,962	214,611
United States Transmission Systems Inc. (USTS)	82,641	73,970	119,872	98,763
U.S. Telephone Communications (U.S. Tel)**	24,000	20,000	16,000	15,400
Business Telecommunications (Bus Tel)	1,258	911	893	635
Transportation Microwave (TransMicro)	957	808	3,204	1,472
	$759,197	$680,358	$850,783	$740,861

Source: figures taken from Form P, Annual Report of Miscellaneous Common Carriers, filed by each of the cited carriers with the FCC. MCI gross and net plant investment taken from MCI annual report in order to reflect total company.
*N-Triple C is a subsidiary of MCI; revenues and expenses estimated. Plant investment (gross and net) included in MCI totals.
**Estimated by U.S. Tel (fiscal year).

"specialized" common carriers, a term based primarily on the voice and data source of their revenues.

On this basis, only 6 of the 57 MCCs which report to the FCC can be classified as SCCs. These six (Table 7) had total revenues of $759.2 million in the calendar year 1981-82. Three of these SCCs, however, account for 97% of the total SCC plant investment, operating expense and revenue (Table 8).

For the same period, the other 51 MCCs had total revenues of $56.7 million of which 80% ($45.6 million) was derived from their traditional source, video-audio transmissions. The remaining revenue of $11 million, a very small share of the total MCC/SCC revenue, was derived from special transmission services including the lease of surplus capacity to SCCs; for instance, 63% of the MCC special services revenue ($11 million) accrues to three MCCs: Western Tele-Communications, Inc., Midwestern Relay Co. and American Microwave & Communications, Inc. Consequently, this review and forecast does not "double count" the $11 million by including it as SCC revenue.

'. . .explosive growth and the promise of untapped potential are, however, beyond reach unless the SCCs expand their networks. And that is exactly what the six major SCCs intend to do. . .'

Toll revenues for the top SCCs, the Bell System and the Independents increased by 51% during the 3-year period of 1979 through 1981, the latest period for which data is available (Table 6). And although the SCCs currently have a small market share, even a 1% shift in their favor is significant in this multi-billion-dollar market.

Where such shifts might occur depends largely upon a specific SCC's marketing strategy and the value attributed to various segments of the market. Currently, the business user contributes the bulk of SCC revenues although SCCs now are aggressively exploiting the residential market.

MCI Communication Corp.'s residential customer base, for example, is growing dramatically: For the fiscal year ending in March 1982, the company reported total revenues of $506 million, up 116% over the previous fiscal year revenues of $270 million. Residential service was the fastest growing segment, increasing its contribution to total revenues from 13% to 27%. In October 1981, however, MCI's customer base consisted of 400,000 residential customers and 125,000 business customers. All of the residential customers were added after March 1980 and by December 1982, the customer base numbered 1 million—250,000 business; 750,000 residential.

Since the FCC's recent approval of competition in international voice and record transmission (TELEPHONY, Dec. 20, 1982, p. 12), some SCCs will become major contenders for new traffic or a share of existing traffic, especially from large, multinational corporations. Similarly, domestic corporate users with a large volume of point-to-point traffic will be continuing and lucrative targets of SCC activity.

Another source of revenue for SCCs is the resale of long distance service, an activity that virtually all of them are pursuing in varying degrees. Currently, resale is the major activity of U.S. Telephone Communications (U.S. Tel) although the company has announced a construction and leasing plan for an extensive private network. Also, independent resellers often use SCC circuits as essential parts of their capability.

The SCC record of explosive growth and the promise of untapped potential are, however, beyond reach unless the SCCs expand their networks. And that is exactly what the six major SCCs intend to do, spending an estimated $1.2 billion to $1.5 billion in 1983 and virtually doubling their plant investment.

Table 8 SCC Market Share and Cumulative Share

	Revenues		Expenses		Gross Plant	
	Share	Cumulative	Share	Cumulative	Share	Cumulative
MCI	54.4%		56.2%		50.4%	
N-Triple C	0.8%	55.2%	0.7%	56.9%	—	50.4%
SPC	30.4%	85.6%	29.0%	85.9%	33.1%	83.5%
USTS	10.9%	96.5%	10.9%	96.8%	14.1%	97.6%
U.S. Tel	3.2%	99.7%	3.0%	99.8%	1.9%	99.5%
Bus Tel	0.2%	99.9%	0.1%	99.9%	0.1%	99.6%
TransMicro	0.1%	100.0%	0.1%	100.0%	0.4%	100.0%

Interconnect companies

No newcomers to the telecommunications scene, interconnect com-

Table 9 PBX and Key System Potential-1981 TELEPHONY Interconnect Survey

Employe Range	% Establishments Base: 4,400,000	% Employment Base: 65,000,000	Primary Equipment Applications (X—Probable; ·—Possible) Bus Line	Bus Ext.	KTS	PBX -100	-200	-500	+500	KTS Behind PBX
1-4	58.0%	7.0%	X	X						
5-9	19.0%	9.0%	·	·	X					
10-19	11.0%	11.0%			X	·				
20-49	7.0%	16.0%			·	X				
50-99	3.0%	12.0%			·	X	·			
100-249	1.3%	13.7%				·	X			·
250-499	0.4%	9.4%					X	X	·	·
500-999	0.2%	7.9%						X	X	·
1000+	0.1%	14.6%						·	X	·

panies have been a major force in reshaping United States policy and in wooing a substantial part of the business communications market away from traditional telephone companies. Some facts often are obscured, however, by the promotional "clutter" which is characteristic of business communications marketing:

- There is only one business user market, the same one that already existed. Now, alternate suppliers offer a greater variety of PBXs (private branch exchanges), key systems and the like which only provide traditional voice communications although more efficiently. Expanding the market beyond this traditional dimension mainly depends on the availability and marketability of integrated or automated office systems and equipment, an area of current intense activity by all major suppliers.
- Only 20 large parent companies, affiliates and franchisees of companies such as Executone, Rolm and the like, account for almost 25% of the known 2300 interconnect company locations in the United States and 80% of the annual sales volume, according to TELEPHONY's 1981 survey. Moreover, some of the parent interconnect companies, such as Centel Business Systems and Executone, are either affiliates or subsidiaries of major telecommunications holding companies.
- Excepting information-intensive business establishments, probable PBX applications are limited to 10% of total U.S. establishments, those with 20 or more employes (Table 9). Table 10 shows the interconnect companies' PBX and key system customer base and the distribution of the base between all the companies and the 20 parent-affiliated companies.

TELEPHONY's 1982 interconnect survey further defined the composition of the interconnect customer base, showing more clearly the part supplied by independent interconnect companies and the 20 parent-affiliated interconnect companies (Table 11). The summary clearly shows that the share of the large PBX customer base increases for the affiliated interconnect companies.

Each interconnect segment also fits very precisely into the U.S. business establishment segments (Table 12). Establishments with one to nine employes, for example, comprise 77% of the total establishments but only 16% of U.S. employment in private industry. This business sector increasingly will be served by local contractor, retail-type communications suppliers. Independent, non-affiliated, one-location interconnect companies mainly compete to serve business establishments having 10-49 employes. The 20 parent-affiliated companies compete fiercely to serve establishments with more than 50 employes, concentrating heavily on the top 5% of U.S. business establishments.

A useful technique for estimating the current potential for PBXs in the top 5% establishments is illustrated in Table 13. Each establishment is counted as a potential PBX installation and the average lines per system are estimated by using a factor of 1.23, the U.S. central office (CO) Centrex ratio of employe to lines. Comparing these estimated system sizes to a group of 160 Rolm systems installed in the northeastern U.S. verified the accuracy of the technique. The factor does not apply, however, to large manufacturing and basic industry establishments having more than 500 employes and telecommunications demand quite different from that of a service industry.

'Another complex factor is the state of the economy in the industrialized nations which are moving most rapidly into the "information age." Unemployment is a highly visible effect, at least partially related to this movement, and some telephone companies are reporting net losses in access lines. . .'

The data in Table 13 also correlates with the estimates in the North American Telecommunications

Table 10 1981 TELEPHONY Interconnect Survey Results

Customer Base	Total Interconnect Companies	20 Parent-Affiliated Interconnect Companies
Key systems	66%	32%
PBXs up to 100 lines	17%	39%
100-499 lines	13%	50%
above 500 lines	4%	67%

Table 11 1982 TELEPHONY Interconnect Survey Summary

Interconnect company Employe range (total)	1-10 (33)	11-20 (29)	21-30 (33)	31-40 (32)	41-99 (17)	100 & Over (36)
% Parent-affiliated companies	6%	17%	30%	22%	41%	58%
PBX Installed Base						
up to 100 lines	297 93%	565 82%	1,446 74%	1,043 76%	893 63%	8,304 53%
100-250 lines	19 6%	104 15%	407 21%	246 18%	353 25%	4,828 30%
above 250 lines	3 1%	19 3%	95 5%	73 5%	166 12%	2,679 17%
Key System Installed Base						
Stand-alone Systems	4,413	5,750	8,443	11,032	6,107	23,975
Behind PBX Systems	74	221	733	532	604	7,018
Customer Base Characteristics						
Median Average Employes	15	25	40	35	50	60
Employes Range	5-100	8-100	12-100	6-125	20-800	17-1,500
Cluster Range	8-30	15-50	20-60	20-50	30-100	30-200
Sales (000 omitted)						
1982: Dollar Range	$150-1,200	$195-1,875	$700-5,550	$525-7,400	$2,500-15,500	$6,000-380,000
Cluster Dollar Range	$300-750	$500-1,250	$1,500-2,200	$2,300-3,100	$2,800-6,400	$11,000-22,000
Median Average Sales	$450	$800	$2,000	$2,500	$4,500	$15,000
1983: Dollar Range	$200-2,000	$240-2,500	$800-8,000	$750-14,000	$3,000-16,100	$7,000-530,000
Cluster Dollar Range	$500-1,000	$1,000-2,000	$2,000-3,000	$3,000-3,500	$3,500-8,000	$12,000-35,000
Median Average Sales	$750	$1,300	$2,400	$3,000	$6,000	$20,000
1982-83 Median Average % Growth Sales	+60%	+40%	+30%	+35%	+33%	+29%

Assn.'s (NATA) "1982 Telecommunications Equipment Industry Statistical Review." This report, authored by The Eastern Management Group, estimates a current total of 192,000 installed PBX systems and, by the end of 1985, 247,000 installed systems.

Although useful, these data should be weighed carefully against other important factors which now cannot be quantified accurately. A migration away from central office Centrex, for example, would result in an increase in the number of PBX installations. Bell operating companies, however, are beginning to suggest enhancement of Centrex rather than abandonment.

Another complex factor is the state of the economy in the industrialized nations which are moving most rapidly into the "information age." Unemployment is a highly visible effect, at least partially related to this movement, and some telephone companies are reporting net losses in access lines, negative impact on revenue and the like for 1982. The effect on business customer plans to install or expand information management systems and equipment is difficult to measure.

Yet this area, according to the NATA report, presents interconnect companies with substantial growth opportunities, "servicing and selling add-on equipment such as data terminals to established customers."

The business customer clearly is the one lucrative target in the sights of all communications suppliers.

'Major U.S. users. . .are more than passive consumers of telecommunications equipment and carrier services. They already have demonstrated their will and power in reshaping. . .policy. . .And this telecommunications "revolution" is spreading throughout the. . .world. . .'

And, if interconnect companies have their way (TELEPHONY, Dec. 13, 1982, p. 11), the Bell operating companies will be required to form separate subsidiaries. Then, the U.S. business customer will have only two real choices for telecommunications equipment: dealing directly with a manufacturer or with an interconnect-type company.

Large private users

TELEPHONY's 1981 survey of the Fortune 1000 industrial companies and 300 service organizations revealed that their professional telecommunications managers have network and financial responsibilities comparable to those of small to mid-sized telephone companies. Some of their organizations have annual sales—not assets—exceeding the budgets of many nations. According to the survey, these companies spent $25 billion in 1981 for telecommunications equipment and services. Assuming a 12% increase including adjustment for inflation yields a conservative estimate of $28 billion spent in 1982. Applying the 20/80 rule of thumb provides an estimate of $35 billion spent by the total private sector in 1982.

TELEPHONY recently surveyed this same group of telecommunications managers in order to quantify their purchasing responsibility for voice and data communications equipment and services. The results (Table 14) confirm that the Fortune companies' top management places a high value on these professionals and relies confidently on their judgment: More than 90% of them have full responsibility for determining need, evaluating services and equipment and selecting vendors. More than half of them have final purchase authority.

More than 60% of the telecommunications managers are involved in evaluating and selecting data communications equipment; 34% of them have purchasing authority.

Only 21% of them are not invovled in data communications, mainly because their companies have little or no such requirements.

Some form of merged or integrated

Continued on page 40

Table 12 Distribution of U.S. Business Customer Base by PBX and Interconnect Company

Employe Range	% Establishments	Customer Base: Median Average	Cluster Range	Employes Total Range	PBX Customer Base -100	100-250	+250	Median Average Sales Per Location 1982	(000 Omit) 1983	1982-83 %Projected Growth	% Locations Parent-Affiliated Interconnects
1-4	58.0%										
5-9	19.0										
10-19	11.0	15	8-30	5-100	93%	6%	1%	$ 450	$ 750	+60%	6%
20-49	7.0	25	15-50	8-100	82%	15%	3%	800	1,300	+40%	17%
50-99	3.0	35	20-50	6-125	76%	18%	5%	2,500	3,000	+35%	22%
		40	20-60	12-100	74%	21%	5%	2,000	2,400	+30%	30%
Over 100	2.0	50	30-100	20-800	63%	25%	12%	4,500	6,000	+33%	41%
		60	30-200	17-1,500	53%	30%	17%	15,000	20,000	+29%	58%

voice and data communications responsibility already has occurred in companies with annual communications expenditures of $5 million or more. Only 34% of these companies maintain distinctly separate departments for each function. Typically, companies in this expenditure range each have 250 locations with 10 or more employes at each location.

Of the companies participating in the survey, 68 percent use the services of one or more SCCs—76% use MCI; 24%, SPC (Southern Pacific Communications); 9%, ITT/USTS (International Telephone & Telegraph Corp./United States Transmission Systems Inc.); and 1%, others.

Reselling communications services currently involves only 1% of the companies, although 15% of them plan to do so, beginning in 1983 or 1984. Twenty two percent of the participating companies already have local area networks (LANs) and more are planned for 1983. Organizations spending $5 million or more annually own 83% of the private microwave networks and 48% of the private mobile networks.

Centrex currently serves 50% of the companies of whom 64% plan to discontinue Centrex within 2 years; 36%, within 4 years. (This announcement of the death of Centrex may be greatly exaggerated because the Bell operating companies may enhance the service, prolonging its life.)

The major group of U.S. companies spending substantial sums for international voice and data telecommunications services is not identical with the large-user, domestic group, according to a recent survey prepared for the National Telecommunications and Information Administration (NTIA) by Martech Strategies, Inc. Of the companies surveyed, however, 81% annually spend more than $500 thousand and the total universe of these companies is estimated at approximately 100. There are thousands of companies in the groups spending lesser amounts of money.

Table 13 Top 5% of U.S. Private Business Establishments

Employe Range	Number of Establishments	Total Employes	Average Employes	Average Lines	160 Rolm PBX Installed Systems (Northeast U.S.)
50-99	132,000	7,500,000	57	48	50
100-249	57,200	8,905,000	156	126	145
250-499	17,600	6,110,000	347	282	322
500-999	8,800	5,135,000	583	474	633
+1,000	4,400	9,490,000	2,156	1,752	633

The survey, "Present and Projected Business Utilization of International Telecommunications," also indicated that the number of worldwide voice-data circuits of major users was more than double the number of circuits terminating in the United States.

Major U.S. domestic and international users are, therefore, more than passive consumers of telecommunications equipment and carrier services. They already have demonstrated their will and power in reshaping the telecommunications policy of the United States. And this telecommunications "revolution" now is spreading throughout the industrialized world. □

Table 14 Leading Characteristics of Large Business Users of Telecommunications Equipment and Services

Communications manager responsibility	Voice Communications	Data Communications
Determine need	96%	48%
Evaluate services/equipment	93%	69%
Select vendors	90%	61%
Approve purchase	55%	34%
Not involved	0%	21%
Communications manager responsibility vs. company's annual telecom expenditure		
Under $100,000	0%	10%
$100,000-500,000	6%	9%
$500,000-1 million	5%	23%
$1 million-5 million	23%	35%
Over $5 million	66%	23%

Departmental reporting responsibility vs. company's annual telecom expenditure	Separate Depts.	VoiceCom Reports to Datacom	Integrated Depts.	DataCom Reports to VoiceCom
$100,000-500,000	40%	60%		
$500,000-1 million	50%	50%		
$1 million-5 million	50%	44%	6%	
Over $5 million	34%	26%	36%	4%